



Service Repair Manual

Models

**320, 320L TRACK-TYPE
EXCAVATOR**

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Product: EXCAVATOR

Model: 320-A EXCAVATOR 7WK

Configuration: 320, 320L TRACK-TYPE EXCAVATORS 7WK00001-UP (MACHINE) POWERED BY 3116 ENGINE

Disassembly and Assembly

446 and 446B Backhoe Loaders, Lexion 450 Combine, 3114 and 3116 Engines, IT18F Integrated Toolcarrier, D6M Track-Type Tractor and 928F, 950F and 950G Wheel Loaders

Media Number -SEN3611-18

Publication Date -01/05/2009

Date Updated -27/05/2009

i01929732

Crankshaft Wear Sleeve (Rear) - Install

SMCS - 1161-012-ZV

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
C ⁽¹⁾	132-8772	Seal Locator	1
D ⁽¹⁾	1U-7596	Bolt	2
E ⁽¹⁾	1U-7597	Sleeve Ring	1
F ⁽¹⁾	1U-7594	Seal Installer	1
G ⁽¹⁾	9S-8858	Nut	1

⁽¹⁾ Part of the **1U-7598** Seal Installer

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Ensure that the rear of the crankshaft is thoroughly clean and dry prior to the installation of the crankshaft rear seal.
-

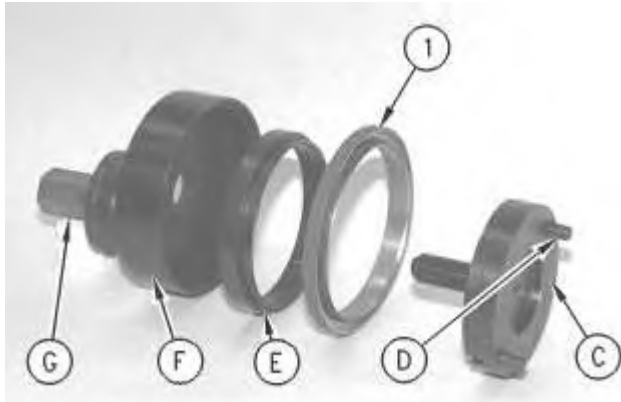


Illustration 1

g01003875

2. Fasten Tooling (C) to the rear of the crankshaft with Tooling (D). Hand tighten Tooling (D).
3. Position the crankshaft rear seal and crankshaft rear sleeve (1) on Tooling (C). Position Tooling (E) on Tooling (C).

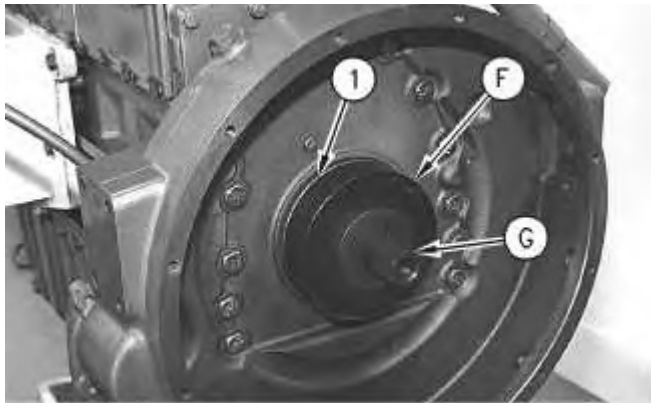


Illustration 2

g01003866

Typical example

4. Position Tooling (F) over Tooling (C) and Tooling (E). Install Tooling (G). Tighten Tooling (G) in order to install the crankshaft rear seal and the crankshaft wear sleeve.
5. Remove Tooling (G), Tooling (F), and Tooling (E). Turn over Tooling (E). Install Tooling (E), Tooling (F), and Tooling (G). Tighten Tooling (G) in order to complete the installation of the crankshaft rear seal and the crankshaft wear sleeve.
6. Remove Tooling (G) and Tooling (F). Check Tooling (E) and Tooling (C). The faces of Tooling (E) and Tooling (C) will be flush if the crankshaft rear seal and the crankshaft wear sleeve are properly installed. Refer to the Specifications module for more information.
7. Remove Tooling (E), Tool (E), and Tooling (C).

End By:

- a. Install the flywheel. Refer to Disassembly and Assembly, "Flywheel - Install".

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446 and 446B Backhoe Loaders, Lexion 450 Combine, 3114 and 3116 Engines, IT18F Integrated Toolcarrier, D6M Track-Type Tractor and 928F, 950F and 950G Wheel Loaders

Media Number -SEN3611-18

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i01987820

Crankshaft Rear Seal Carrier - Remove and Install

SMCS - 1161-010-C3

Removal Procedure

Start By:

- a. Remove the flywheel housing. Refer to Disassembly and Assembly, "Flywheel Housing - Remove and Install".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

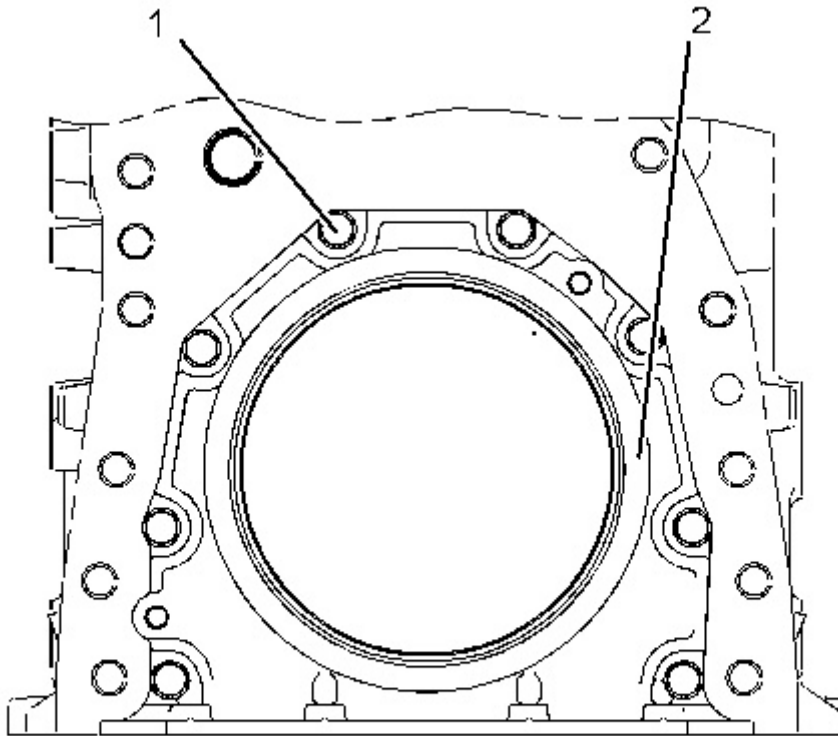


Illustration 1

g01027007

1. Remove bolts (1).
2. Remove rear seal carrier (2).

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	138-8440	Component Cleaner	
B	169-5464	Quick Cure Primer	
C	1U-8846	Gasket Sealant	
D	9S-3263	Thread Lock Compound	

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

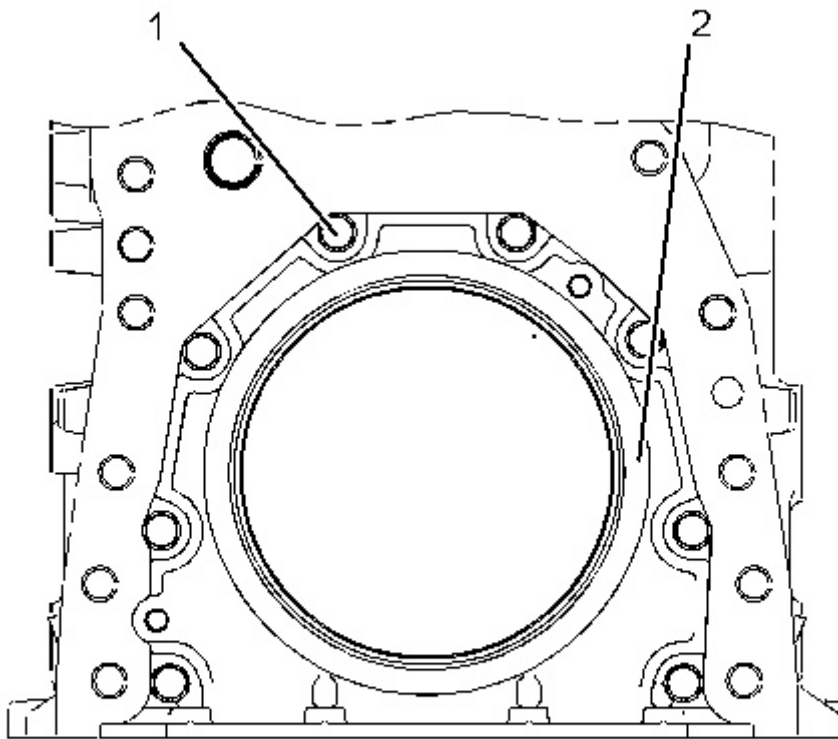


Illustration 2

g01027007

1. Clean the joint face of rear seal carrier (2) and the cylinder block with Tooling (A).
2. Apply Tooling (B) to the joint face of rear seal carrier (2). Allow the primer to air dry for three to five minutes.

Note: Tooling (C) is used on the joint face of rear seal carrier (2). Do not allow the sealant to get into the oil passage in the mounting face of the cylinder block.

3. Apply Tooling (C) to the joint face of rear seal carrier (2). Spread the sealant uniformly. Rear seal carrier (2) must be installed within ten minutes of application of the sealant.
4. Position rear seal carrier (2) on the dowels in the rear of the cylinder block.
5. Apply Tooling (D) on the threads of bolts (1). Install bolts (1) that hold rear seal carrier (2) to the cylinder block.

End By:

- a. Install the flywheel housing. Refer to Disassembly and Assembly, "Flywheel Housing - Remove and Install".

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i01981940

Flywheel Housing - Remove and Install

SMCS - 1157-010

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	138-7573	Link Bracket	2

Start By:

- a. Remove the flywheel. Refer to Disassembly and Assembly, "Flywheel - Remove".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting, and repair of the product. Be prepared to collect the fluid with suitable containers

before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat products.

Dispose of all fluids according to local regulations and mandates.

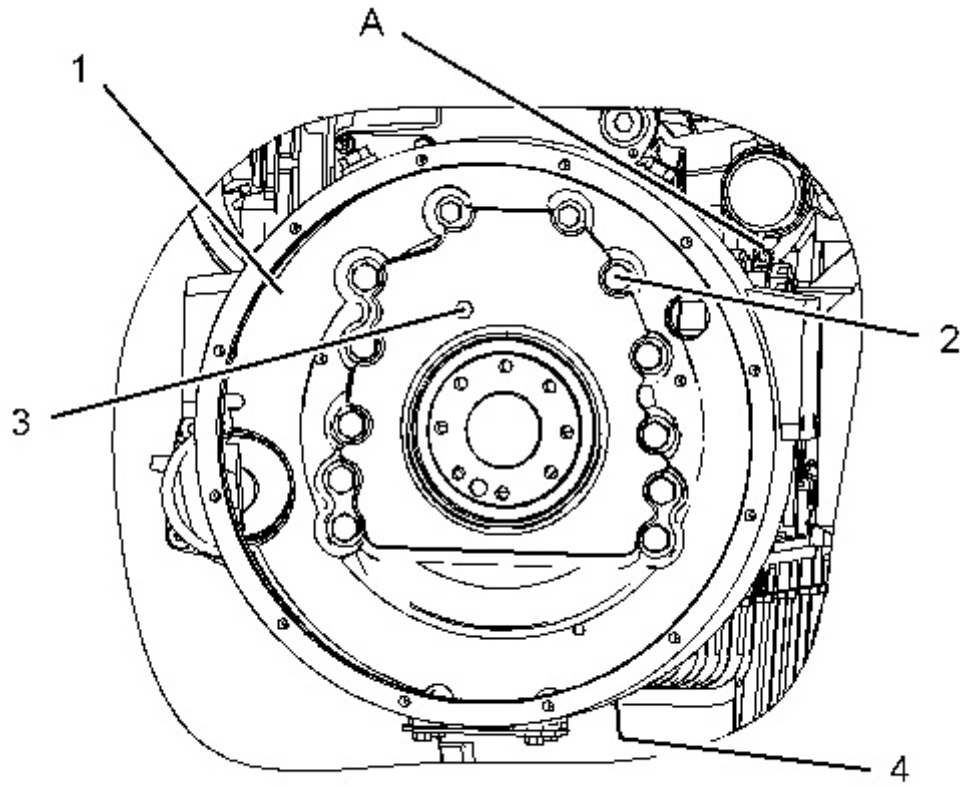


Illustration 1

g01027146

1. Fasten Tooling (A) and a suitable lifting device to flywheel housing (1).
2. Remove bolts (2) and bolt (3) that fastens the flywheel housing to the cylinder block.
3. Remove bolts (4). Remove flywheel housing (1). The weight of flywheel housing (1) is approximately 25 kg (55 lb).

Installation Procedure

Table 2

Required Tools

Tool	Part Number	Part Description	Qty
A	138-7573	Link Bracket	2
B	1U-8846	Gasket Sealant	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. Apply Tooling (B) to the entire mounting face of the flywheel housing prior to installation.
-

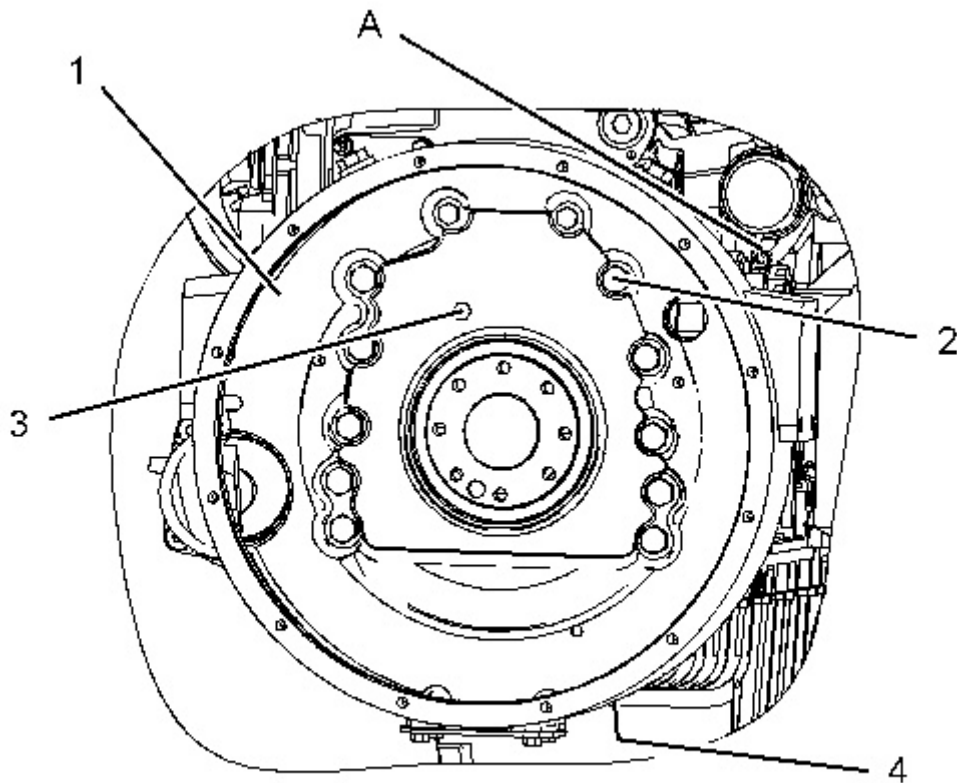


Illustration 2

g01027146

2. Fasten Tooling (A) and a suitable lifting device to flywheel housing (1). The weight of flywheel housing (1) is approximately 25 kg (55 lb). Position flywheel housing (1) on the cylinder block. Install bolts (4).
3. Install bolts (2) and bolt (3).

End By:

a. Install the flywheel. Refer to Disassembly and Assembly, "Flywheel - Install".

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i01929931

Vibration Damper and Pulley - Remove and Install

SMCS - 1205-010

Removal Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting, and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat products.

Dispose of all fluids according to local regulations and mandates.

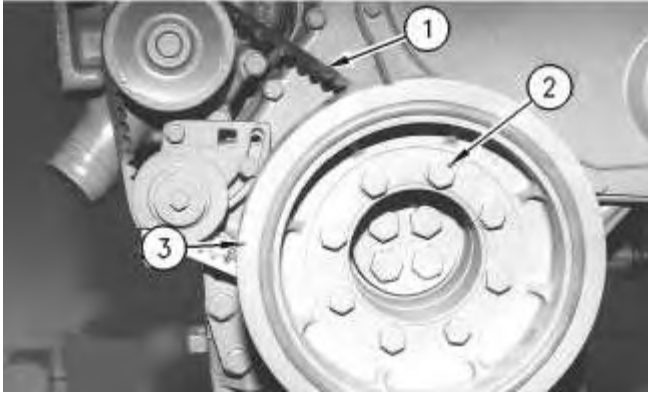


Illustration 1

g00691836

1. Remove bolts (2), crankshaft vibration damper (3), and spacers from the crankshaft pulley.

Note: For information on the reusability of the vibration damper on 3114 and 3116 engines, refer to Guideline For Reusable Parts And Salvage Operations, SEBF8220, "Specifications for Damper Inspection 3114 and 3116 Engines".

2. Loosen the tension on water pump drive belt (1). Remove the belt from the crankshaft pulley.

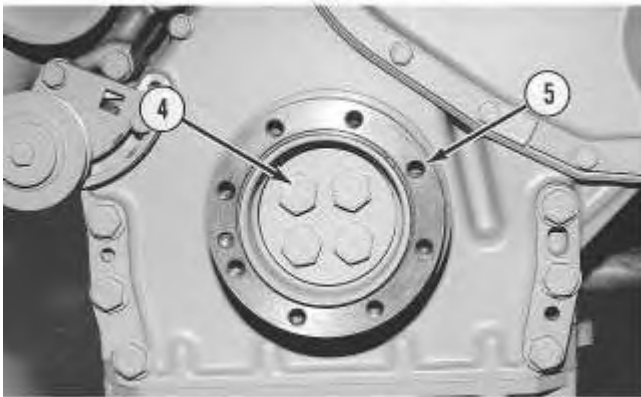


Illustration 2

g00691831

3. Remove bolts (4) and the washers.
4. Remove crankshaft pulley (5).

Note: For information on the reusability of the crankshaft pulley, refer to Guideline For Reusable Parts And Salvage Operations, SEBF8046, "Cast Iron and Steel Pulleys".

Installation Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

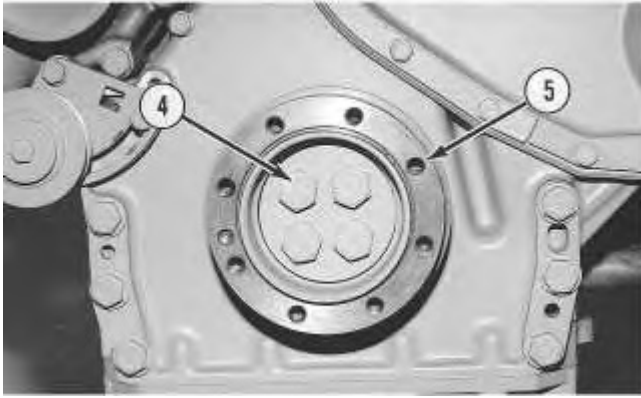


Illustration 3

g00691831

1. Position crankshaft pulley (5) on the crankshaft. Install bolts (4) and tighten the bolts to a torque of $160 \pm 30 \text{ N}\cdot\text{m}$ ($118 \pm 22 \text{ lb ft}$).

Note: For information on the reusability of the crankshaft pulley, refer to Guideline For Reusable Parts And Salvage Operations, SEBF8046, "Cast Iron and Steel Pulleys".

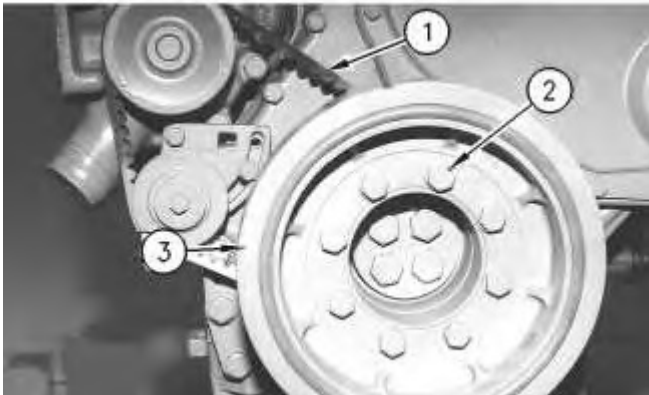


Illustration 4

g00691836

2. Install water pump drive belt (1).

Note: Check the alignment marks on the rubber vibration dampers for proper alignment. The rubber vibration damper should be replaced if the rubber vibration damper is out of alignment. Refer to Specifications, "Vibration Damper".

3. Install spacers and crankshaft vibration damper (3). Tighten bolts (2) to a torque of $55 \pm 10 \text{ N}\cdot\text{m}$ ($40 \pm 7 \text{ lb ft}$).

Note: For information on the reusability of the vibration damper on 3114 and 3116 engines, refer to Guideline For Reusable Parts And Salvage Operations, SEBF8220, "Specifications for Damper Inspection 3114 and 3116 Engines".

4. Adjust the tension of water pump drive belt (1). Refer to the Specifications Module, "Belt Tension Chart". Also, refer to the Operation and Maintenance Manual, "Belt - Inspect".

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Media Number -SEN3611-18

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i01982085

Crankshaft Front Seal - Remove

SMCS - 1160-011

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	1U-7600	Slide Hammer Puller	1
B	1U-8145	Drill Bit	1

Start By:

- a. Remove the vibration damper and the pulley. Refer to Disassembly and Assembly, "Vibration Damper and Pulley - Remove and Install".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

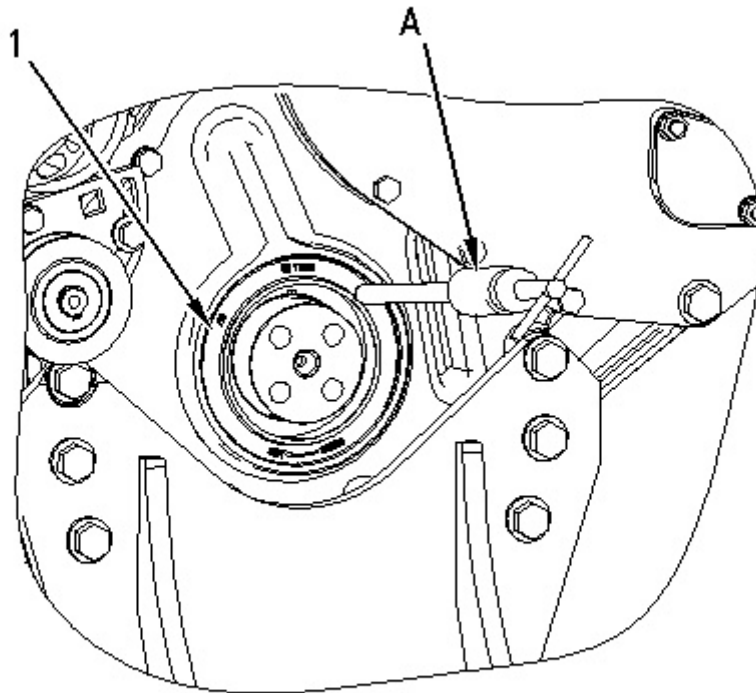


Illustration 1

g00989224

1. Use Tooling (B) and carefully drill three evenly spaced holes in crankshaft front seal (1).
2. Alternate between the drilled holes and use Tooling (A) to remove crankshaft front seal (1).

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i01982092

Crankshaft Front Seal - Install

SMCS - 1160-012

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
C	1U-7430	Front Seal Installer	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

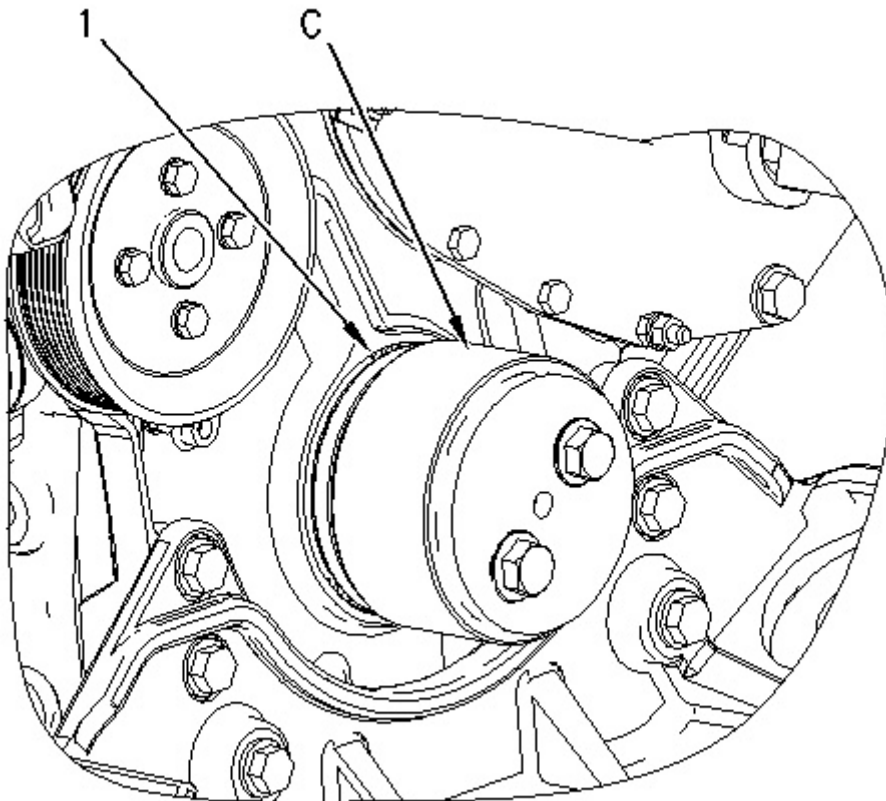


Illustration 1

g00989228

1. Use Tooling (C) to install crankshaft front seal (1).

Note: The crankshaft seal is designed to be installed dry.

End By:

- a. Install the vibration damper and the pulley. Refer to Disassembly and Assembly, "Vibration Damper and Pulley - Remove and Install".



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i01176651

Front Cover - Remove

SMCS - 1166-011

Removal Procedure



Illustration 1

g00629709

Note: It is not necessary to remove the vibration damper and the crankshaft pulley in order to remove the front cover.

1. Remove bolts (1) from front cover (2).
2. Remove front cover (2) and the gasket from the front of the engine.

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